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FRONT END CONSTRUCTION FOR ROCK DRILLS

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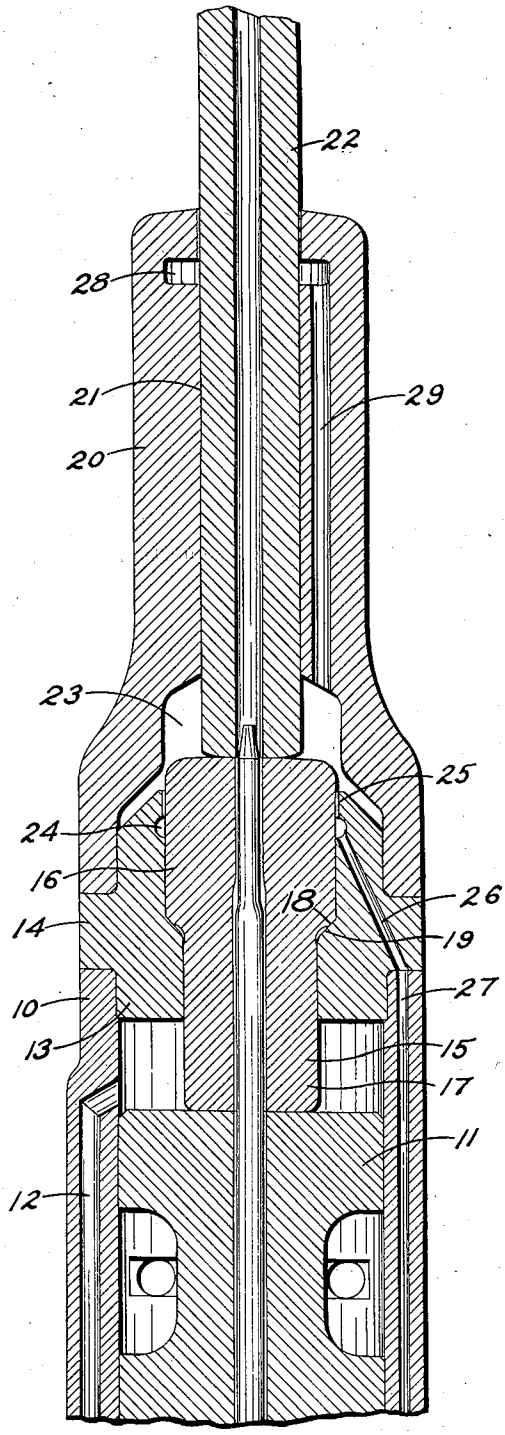

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FRONT-END CONSTRUCTION FOR ROCK DRILLS

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5 Claims. (Cl. 121—10)

This invention relates broadly to rock drills of the fluid actuated percussive type, but more particularly to the front end construction of such rock drills having an anvil block for transmitting the blows of the hammer piston to the tool element.

In drilling holes, especially overhead holes, with a rock drill equipped with a flushing system for removing the chips from the drilled hole, the water will run down the drill steel and enter the rock drill between the drill steel and the front housing, from where it is liable to carry dust and other extraneous matter into the operative parts of the drill. The anvil block being immediately below the drill steel, the water will flow between the anvil block and its housing, thus causing premature wear of the anvil block, as well as permitting further penetration of extraneous matter into other operative parts of the rock drill.

One object of this invention is to produce a front end construction for rock drill with means preventing the admission of extraneous matter from the front end of the drill into the operative parts thereof.

Other objects and advantages more or less ancillary to the foregoing reside in the specific construction and aggroupment of the elements peculiar to this structure, as will become apparent from a more complete examination of this specification.

The accompanying drawing represents a sectional elevational view of the front end of a rock drill constructed in accordance with the practice of the invention.

Referring more particularly to the drawing, 10 designates the front portion of the rock drill cylinder having a hammer 11 reciprocable therein. The movement of the hammer away from the front end of the cylinder is effected by motive fluid admitted therein through a passage 12. Mounted in the extreme front end of the cylinder 10, there is a front cylinder washer 13 having a flange 14 in abutment with the front end face of the cylinder. This front cylinder washer serves as a guide for an anvil block 15 having an enlarged portion or head 16 protruding from the front end of the washer, and a restricted portion or shank 17 extending into the cylinder for receiving the blows of the hammer 11. Intermediate its ends, the anvil block 15 is provided with a tapered shoulder 18 engageable with a corresponding seat 19, formed in the cylinder washer 13, for limiting the movement of the anvil block toward the cylinder 10. Mounted on the front portion of the cylinder washer 13, and extending forwardly therefrom, there is a front housing 20 provided with a longitudinally disposed bore 21 adapted to slidably receive a tool implement or drill steel 22, which rests on the front face of the anvil block head 16. Toward the anvil block 15, the bore 21 is enlarged to form a chamber 23 within which the head 16 of the anvil block is free to slide for distributing blows to the drill steel 22.

Referring more particularly to the present invention, 24 designates an annular internal groove formed in the forward end of the cylinder washer 13 around the anvil block head 16. This groove is in constant communication with the chamber 23 through an annular clearance 25, provided between the anvil block head 16 and the cylinder washer 13. Opening into the groove 24, there is a port 26 in communication with a port 27 formed in the wall of the cylinder 10.

The housing 20 is also provided with an internal annular groove 28, which is formed in the forward end portion thereof around the drill steel 22. This last groove is in constant communication with the chamber 23 through a port 29.

During the operation of the device, pressure fluid, from any suitable source is constantly admitted into the groove 24 through the ports 26 and 27. From the groove 24, the pressure fluid is free to escape around the anvil block head 16 into the chamber 23 through the annular clearance 25. From the chamber 23, the fluid will flow through the port 29 into the annular groove 28, from where it will be free to escape to the exterior of the housing around the drill steel 22. The water running down the drill steel, or any foreign matter falling from the drilled hole, will be prevented to enter the rock drill between the drill steel and housing 20, due to the constant jet of pressure fluid escaping from the front end of the bore 21 around the drill steel 22. However, should any foreign matter find its way into the chamber 23, it will be prevented to pass between the anvil block 16 and cylinder washer 13, due to the constant flow of the pressure fluid escaping from the groove 24 around the anvil block head 16 via the annular clearance 25.

Although the foregoing description is necessarily of a detailed character, in order to completely set forth the invention, it is to be understood that the specific terminology is not intended to be restrictive or confining and it is to be further understood that various rearrangements of parts and modification of structural detail may be resorted to without departing from the

scope or spirit of the invention as herein claimed.

I claim:

1. In a front end construction for rock drills, the combination of a casing having a drill steel slidable therein, an anvil block in abutting engagement with said drill steel, an element within which said anvil block is slidably guided, and means including an annular clearance between the engageable wall of said anvil block with said element for circumferentially supplying pressure fluid to the forward extremity of the bearing between said anvil block and element to keep said bearing free from dirt and other extraneous matter.

2. In a front end construction for rock drills, the combination of a casing having a drill steel slidable therein, an anvil block in abutment with said drill steel, an element within which said anvil block is slidably guided, and means for supplying pressure fluid circumferentially through the forward extremity of said element around said anvil block to keep the bearing between the latter and said element free from dirt and other extraneous matter.

3. In a front end construction for rock drills, the combination of a casing having a drill steel slidable therein, an anvil block in abutment with said drill steel, an element within which said anvil block is slidably guided, a groove within said element having pressure fluid supplied thereto, and means affording the pressure fluid to flow from said groove around said anvil block through the forward extremity of said element to keep the mutually engageable surfaces of said anvil block and element free from dirt and other extraneous matter.

4. In a front end construction for rock drills, the combination of a casing having a drill steel slidable therein, an anvil block in abutment with said drill steel, an element within which said anvil block is slidably guided, a groove within said element having pressure fluid supplied thereto, and an annular clearance between said element and anvil block leading from said groove to the forward extremity of said element through which the pressure fluid from said groove is free to flow for preventing the admission of dirt and other extraneous matter to the mutually engageable surfaces of said anvil block and element.

5. In a front end construction for rock drills, the combination of a casing having a drill steel slidable therein, an anvil block in abutment with said drill steel, an element within which said anvil block is slidably guided, a chamber within said casing within which said anvil block is free to slide, means for admitting pressure fluid through the forward extremity of said element around said anvil block into said chamber, an annular internal groove within said casing near the forward extremity thereof, and means for supplying pressure fluid from said chamber into said groove and therefrom around said drill steel through the forward extremity of said casing to prevent the admission of dirt and other extraneous matter to the mutually engageable surfaces of said drill steel and casing.

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